

# Mineral Industry Surveys

For information, contact:

Joseph Gambogi, Titanium Commodity Specialist  
U.S. Geological Survey  
983 National Center  
Reston, VA 20192  
Telephone: (703) 648-7718, Fax: (703) 648-7722  
E-mail: [jgambogi@usgs.gov](mailto:jgambogi@usgs.gov)

Robin Kaiser (Data)  
Telephone: (703) 648-7948  
Fax: (703) 648-7792

Internet: <http://minerals.usgs.gov/minerals/>  
MINES FaxBack: (703) 648-4999

## TITANIUM IN THE FIRST QUARTER 2000

According to the U.S. Geological Survey (USGS), titanium mill product shipments in the first quarter of 2000 were 6,110 metric tons, a 3% increase compared with those from the previous quarter. Receipts of titanium scrap totaled 5,570 tons with 1,600 tons of home scrap and 3,980 tons of purchased scrap. Scrap receipts decreased 9% compared with receipts from the previous quarter.

Data for titanium metal products are developed by the USGS from a voluntary survey of domestic operations. Data for nonrespondents were estimated based on previously reported data.

### Titanium Mineral News

Millennium Inorganic Chemicals Inc. made plans to lower operating costs and improve ore recovery at the Titanio do Brazil S.A. (Tibras) operation near Mataraca, Paraiba, Brazil. The project is expected to be completed by December 2001, and should raise ilmenite capacity at Mataraca to 120,000 tons per year from about 100,000 tons per year. Tibras, a Brazilian company, also operates a sulfate-route titanium pigment plant at Salvador, Bahia, Brazil (Millennium Inorganic Chemicals Inc., 2000).

Hitox Corp. of America acquired synthetic rutile producer Malaysian Titanium Corp. (MTC). Hitox Corp.'s Corpus Christi, TX, plant produces buff titanium pigment by refining and fine grinding of synthetic rutile. MTC is currently the only supplier of synthetic rutile to the Corpus Christi plant. The acquisition reversed Hitox Corp.'s 1994 sale of its interest in MTC. Hitox has immediate plans to double MTC's 2,270-ton-per-year synthetic rutile capacity (North American Minerals News, 2000a).

Process improvements were underway at QIT-Fer et Titane's (QIT) upgraded slag (UGS) plant at Sorel, Quebec. The UGS plant refines a portion of the sulfate-grade slag produced at Sorel to yielding a 95% titanium dioxide product suitable for chloride-route pigment production. QIT plans to increase UGS capacity from the existing 200,000 tons per year to 350,000 tons per year. Total slag capacity at Sorel is reported to be about 1 million tons (North American Minerals News, 2000b).

### Titanium Metal News

Under monthly invitation for bids for the sale of titanium sponge held in the Defense National Stockpile, several awards were made by the Defense National Stockpile Center from January through May 2000 (see below). Awards for this period totaled 554 tons with a combined value of \$1.68 million. Future sales of titanium sponge are expected to be conducted on a monthly basis in a negotiated format. Interested parties should contact Caitlin O'Leary, Defense National Stockpile Center, at (703) 767-6753 (Defense National Stockpile Center, 2000a,b,c,d,e).

Defense National Stockpile Awards			
Firm	Month	Quantity (pounds)	Value
Goldman Titanium Co.	Jan	245,000	\$318,500
Willan-Wogen Alloys	Jan	200,000	272,000
Goldman Titanium Co.	Feb	190,000	247,000
Specialty Metallurgical Products Co.	Feb	200,000	302,000
KB Alloys, Inc.	Mar	40,000	56,000
Specialty Metallurgical Products Co.	Mar	200,000	302,000
Willan-Wogen Alloys	Apr	40,000	50,000
Goldman Titanium Co.	May	105,000	136,500

Titanium Metals Corp. (TIMET) announced it had filed a lawsuit against the Boeing Co. for repudiation and breach of a long-term titanium purchase and supply agreement between the two companies. Under the terms of a 1997 agreement, Boeing was required to buy, directly or indirectly, certain minimum volumes of

titanium products from TIMET for each year of a 10-year contract. TIMET indicated that it was seeking damages that it estimated will be in excess of \$600 million (Titanium Metals Corp., 2000).

RTI International Metals, Inc. announced it had settled a claim for liquidated damages from the Boeing Commercial Airplane Group. Under a long-term contract between the two companies, Boeing was required to order a minimum of 3.25 million pounds of titanium in 1999, however, actual shipments were less than 1 million pounds. The matter was settled for approximately \$6 million (RTI International Metals, Inc., 2000).

Wyman-Gordon Co. was acquired by Precision Cast Parts Corp. In connection with the sale, Wyman-Gordon Titanium Castings, LLC, a joint venture between Wyman-Gordon Co. and TIMET, was acquired by the Ladish Co. Ladish has renamed the company Pacific Cast Technologies, Inc. Pacific Cast is a producer of titanium investment castings for aerospace markets (Ladish Co., 2000).

According to the Japan Titanium Society, Japan's production of titanium sponge and ingot in 1999 was 18,900 tons and 13,900 tons, respectively. In 1999, Japan exported 7,300 tons of sponge and 7,080 tons of ingot. The United States (40%) and the European Union (53%) were the primary destinations for Japan's sponge exports. Japan's 1999 mill product shipments were 11,700 tons, an 8% decrease compared with those of 1998 (Japan Titanium Society, 2000).

### **Titanium Dioxide Pigment News**

The world's largest titanium dioxide pigment producer, E. I. du Pont de Nemours & Co. Inc., is expected to add a new line to its New Johnsonville, TN, pigment plant. The new line is expected to come on-stream in the third quarter of 2000, and is expected to raise capacity by 65,000 tons per year. The New Johnsonville facility is the largest titanium pigment operation in the world with current estimates of capacity ranging from 320,000 to 350,000 tons per year (North American Minerals News, 2000c).

Huntsman ICI Chemicals LLC announced titanium dioxide pigment capacity expansions at Huntsman Tioxide facilities in Europe and Asia. The company plans to increase capacity at its Huelva, Spain, plant by 15,000 tons per year to a total capacity of 90,000 tons per year. At the Teluk Kalung, Malaysia, capacity is expected to be increased by 6,000 tons per year to a total of 56,000 tons per year. Recently, the company announced plans to modernize and expand its Greatham, United Kingdom, plant to 100,000 tons per year. The Greatham expansion is scheduled to include the addition of another production line to its existing plant (Huntsman Corp., 2000). According to industry reports, Huntsman also plans to close its finishing plant in Tracy, Quebec, Canada, move its technical center, and reorganize its management and distribution (Chemical Market Reporter, 2000a).

Kerr-McGee Corp. announced the completion of the acquisition

of Kemira Oy's titanium pigment operations in Botlek, Netherlands, and Savannah, GA. The two acquired plants have a combined capacity of 200,000 tons per year, which has increased Kerr-McGee's total pigment capacity by 60% to 535,000 tons per year. The acquisition has made Kerr-McGee the world's third-largest producer of titanium dioxide pigment (Kerr-McGee Corp., 2000a,b,c). Kerr-McGee recently completed an expansion at its Hamilton, MS, plant raising capacity by 38,000 tons to 188,000 tons per year. Kemira retained ownership of its 120,000-ton-per-year Pori, Finland, plant (Chemical Market Reporter, 2000b).

### **References Cited**

- Chemical Market Reporter, 2000a, Huntsman Tioxide plans to close finishing plant and reorganizers leaders: Chemical Market Reporter, v. 257, no. 6, February 7, p. 3.
- 2000b, TiO<sub>2</sub> market gears up for banner year: Chemical Market Reporter, v. 257, no. 7, February 14, p. 3, 30.
- Defense National Stockpile Center, 2000a, Stockpile accepts titanium bid: Ft. Belvoir, VA, Defense National Stockpile news release, April 19, DNSC-00-1736, 1 p.
- 2000b, Stockpile accepts titanium bid: Ft. Belvoir, VA, Defense National Stockpile news release, February 16, DNSC-00-1699, 1 p.
- , 2000c, Stockpile accepts titanium bid: Defense National Stockpile news release, January 14, DNSC-00-1677, 1 p.
- 2000d, Stockpile accepts titanium bid: Ft. Belvoir, VA, Defense National Stockpile news release, March 10, DNSC-00-1712, 1 p.
- 2000e, Stockpile accepts titanium bid: Ft. Belvoir, VA, Defense National Stockpile news release, May 16, 2000, DNSC-00-1751, 1 p.
- Huntsman Corp., 2000, Huntsman Tioxide announces capacity increases: Salt Lake City, UT, Huntsman Corp. press release, March 31, 1 p.
- Japan Titanium Society, 2000, Japanese titanium statistics report for the 4th quarter 1999: Tokyo, Japan, February 23, 2 p.
- Kerr-McGee Corp., 2000a, Kerr-McGee completes acquisition of Botlek pigment plant: Oklahoma City, OK, Kerr-McGee Corp. press release, May 4, 1 p.
- 2000b, Kerr-McGee completes acquisition of Kemira's Savannah plant: Oklahoma City, OK, Kerr-McGee Corp. press release, April 6, 1 p.
- 2000c, Kerr-McGee to acquire Kemira's U.S. and Netherlands TiO<sub>2</sub> operations: Oklahoma City, OK, Kerr-McGee Corp. press release, February 14, 1 p.
- Ladish Co., 2000, Ladish acquires Wyman-Gordon casting operation: Cudahy, WI, Ladish Co. press release, January 14, 1 p.
- Millennium Inorganic Chemicals Inc., 2000, Millennium Inorganic Chemicals to invest in Paraiba (Brazil) mine upgrade: Hunt Valley, MD, Millennium Inorganic Chemicals Inc. press release, February 2, 1 p.
- North American Minerals News, 2000a, Hitox buys Malaysian Titanium Corp.: North American Minerals News, no. 59, April, p. 2.
- 2000b, QIT's UPS [sic] dioxide plant completes commissioning: North American Minerals News, no. 59, April, p. 2.
- 2000c, Third TiO<sub>2</sub> line for DuPont at Tennessee plant: North American Minerals News, no. 60, May, p. 3.
- RTI International Metals, Inc., 2000, RTI and Boeing settle contract claim: Niles, OH, RTI International Metals, Inc. press release, April 6, 1 p.
- Titanium Metals Corp., 2000, TIMET files lawsuit against the Boeing Company over long-term agreement: Denver, CO, Titanium Metals Corp. news release, March 22, 1 p.

TABLE 1  
COMPONENTS OF U.S. TITANIUM METAL SUPPLY AND DEMAND 1/

(Metric tons)

	1999					2000
	First quarter	Second quarter	Third quarter	Fourth quarter	Year	First quarter
Production:						
Sponge	W	W	W	W	W	W
Ingot	9,180	9,880	10,700	10,900	40,700	9,660
Mill products	6,230	5,890	5,450	6,630	24,200	6,500
Exports:						
Sponge	58	254	237	258	807	183 2/
Waste and scrap	2,170	2,690	1,210	2,070	8,130	1,050 2/
Ingot	129	255	155	145	683	66 2/
Billet	35	57	161	74	327	47 2/
Bloom, sheet bar, slab	332	244	82	190	848	208 2/
Other unwrought	95	166	221	134	616	77 2/
Bars, rods, profiles, wire	522	495	460	396	1,870	380 2/
Other wrought	997	944	599	849	3,390	519 2/
Total	4,330	5,100	3,130	4,110	16,700	2,530 2/
Imports:						
Sponge	547	1,710	2,310	1,430	6,000	1,210 2/
Waste and scrap	1,350	1,610	1,970	1,940	6,870	957 2/
Ingot and billet	425	553	222	181	1,380	269 2/
Powder	23	3	144	54	224	42 2/
Other unwrought	9	(3/)	1	--	10	4 2/
Mill products	596	796	681	423	2,500	290 2/
Other articles of titanium	117	114	83	103	416	102 2/
Total	3,070	4,790	5,410	4,130	17,400	2,880 2/
Stocks, end of period:						
Sponge, Government	31,700	31,700	31,700	31,200	XX	30,600
Sponge, industry	9,690	8,650	8,700	7,970	XX	8,280
Scrap	12,200	11,100	9,870	9,450	XX	7,530
Ingot	4,750	5,170	5,000	5,180	XX	5,940
Total industry	26,700	24,900	23,600	22,600	XX	21,800
Consumption:						
Sponge	4,800	4,210	5,140	3,920	18,100	4,140
Scrap	5,580	6,550	5,250	4,490	21,900	4,980
Ingot	6,640	8,420	6,980	8,800	30,800	8,150
Total	17,000	19,200	17,400	17,200	70,800	17,300
Shipments:						
Mill products (net shipments):						
Forging and extrusion billet	2,180	2,350	2,650	2,930	10,100	2,780
Plate, sheet, strip	(5/)	(5/)	(5/)	1,890	7,170	2,150
Rod, bar, fastner stock, wire	(5/)	(5/)	(5/)	745 6/	3,240 6/	909
Other 4/	(5/)	(5/)	(5/)	339 6/	1,100 6/	280
Total	5,440	5,180	5,100	5,910	21,600	6,110
Castings	148	211	230	168	757	188
Receipts:						
Scrap:						
Home	1,780	3,580	3,020	3,270	11,600	1,600
Purchased	4,400	3,870	3,380	2,850	14,500	3,980
Total	6,180	7,450	6,390	6,120	26,100	5,570

W Withheld to avoid disclosing company proprietary data. XX Not applicable. -- Zero.

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

2/ Imports and exports for first quarter 2000 include January and February, March 2000 data were not available at time of publication.

3/ Less than 1/2 unit.

4/ Data for pipe and tubing, and other have been combined to avoid disclosing company proprietary data.

5/ Data are included in "Total" and "Year" to avoid disclosing company proprietary data.

6/ Not comparable to data published in previous reports.

TABLE 2  
COMPONENTS OF U.S. TITANIUM DIOXIDE PIGMENT SUPPLY AND DEMAND 1/

(Metric tons)

	1999					2000
	First quarter	Second quarter	Third quarter	Fourth quarter	Year	First quarter
Production	320,000	337,000	338,000	360,000	1,350,000	344,000
Imports 2/	51,700	59,900	60,100	53,200	225,000	NA
Exports 3/	80,600	96,700	97,100	109,000	384,000	NA
Stocks, end of period	122,000	121,000	119,000	137,000	XX	142,000
Apparent consumption 4/	266,000	301,000	303,000	286,000	1,160,000	NA

NA Not available. XX Not applicable.

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

2/ Based on Harmonized Tariff Schedule of the United States (2823.00.0000, 3206.10.0050, and 3206.10.0010).

3/ Based on Harmonized Tariff Schedule of the United States (2823.00.0000 and 3206.10.0000).

4/ Apparent consumption = production + imports - exports - stock increase or + stock decrease.

Source: Bureau of the Census.

TABLE 3  
U.S. EXPORTS OF TITANIUM PRODUCTS 1/

(Metric tons)

	1999					2000
	First quarter	Second quarter	Third quarter	Fourth quarter	Year	January- February
Metal:						
Unwrought:						
Sponge	58	254	237	258	807	183
Waste and scrap	2,170	2,690	1,210	2,070	8,130	1,050
Ingot	129	255	155	145	683	66
Billet	35	57	161	74	327	47
Blooms, sheet bars and slab	332	244	82	190	848	208
Other unwrought	95	166	221	134	616	77
Wrought:						
Bars, rods, profiles, wire	522	495	460	396	1,870	380
Other	997	944	599	849	3,390	519
Ores and concentrates	1,440	783	6,400	758	9,380	1,170
Oxides	10,200	11,200	9,010	8,900	39,300	7,010
Pigments	70,400	85,500	88,100	100,000	344,000	67,300

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

Source: Bureau of the Census.

TABLE 4  
U.S. IMPORTS FOR CONSUMPTION OF TITANIUM METAL 1/

(Metric tons)

	1999					2000
	First quarter	Second quarter	Third quarter	Fourth quarter	Year	January- February
Unwrought:						
Sponge:						
Japan	278	896	541	350	2,070	453
Kazakhstan	--	30	183	602	814	421
Netherlands 2/	20	--	--	--	20	--
Russia	209	471	1,560	331	2,570	340
Other	40	317	30	144	531	--
Total	547	1,710	2,310	1,430	6,000	1,210
Waste and scrap:						
Canada	126	17	43	78	264	36
France	150	237	215	352	955	197
Germany	57	88	200	134	479	96
Italy	142	166	185	94	586	--
Japan	327	459	471	530	1,790	243
Russia	58	269	261	104	692	43
United Kingdom	317	178	198	400	1,090	120
Other	173	200	393	246	1,010	222
Total	1,350	1,610	1,970	1,940	6,870	957
Ingot and billet:						
China	96	143	92	15	347	--
Russia	296	344	82	66	787	210
United Kingdom	32	16	30	34	113	19
Other	--	50	18	66	134	40
Total	425	553	222	181	1,380	269
Powder	23	3	144	54	224	42
Other 3/	10	(4/)	1	(4/)	10	4
Wrought:						
Articles of titanium:						
Castings	5	1	3	7	16	9
Other	110	113	80	96	400	93
Other wrought (mill products):						
Bars, rods, profiles, wire	99	249	210	99	657	156
Plates, sheets, strips, foil	421	522	339	197	1,480	115
Tubes and pipes	10	14	48	80	152	10
Other	66	11	84	47	208	9
Total	596	796	681	423	2,500	290

-- Zero.

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

2/ All or part of these data have been referred to the Bureau of Census for verification.

3/ Includes blooms, sheet bars, slabs, and other.

4/ Less than 1/2 unit.

Source: Bureau of the Census.

TABLE 5  
U.S. IMPORTS FOR CONSUMPTION OF TITANIUM CONCENTRATES 1/

(Metric tons)

	1999					2000
	First quarter	Second quarter	Third quarter	Fourth quarter	Year	January- February
<b>Ilmenite:</b>						
Australia	99,000	55,400	51,900	46,000	252,000	63,200
India	--	30,100	--	--	30,100	--
Ukraine	35,400	30,300	--	40,600	106,000	10,000
Other	100	2,600	--	--	2,700	--
Total	134,000	118,000	51,900	86,600	391,000	73,200
<b>Titanium slag:</b>						
Canada	30,600	73,000	35,600	69,200	208,000	--
Norway	10,000	--	--	--	10,000	10,000
South Africa	63,900	126,000	147,000	123,000	459,000	83,600
Total	105,000	199,000	182,000	192,000	678,000	93,600
<b>Rutile:</b>						
Australia	14,600	18,400	12,200	27,300	72,500	16,000
Canada 2/	2	6,020	54	16,500	22,600	16
Sierra Leone	--	4,730	--	--	4,730	--
South Africa	48,500	28,900	21,600	26,200	125,000	27,000
Ukraine	--	--	--	--	--	2
Other	26 r/	62 r/	22	1	111	53
Total	63,200	58,100	33,900	70,100	225,000	43,100
<b>Synthetic rutile:</b>						
Australia	30,600	26,000	27,000	30,600	114,000	26,700
Malaysia	1,190	1,140	1,900	--	4,230	1,520
Ukraine	36	20	--	--	56	--
Other	--	--	38	--	39	--
Total	31,900	27,200	29,000	30,600	119,000	28,300
<b>Titaniferous iron ore:</b>						
Canada	75	3,980	6,600	74	10,700	191

r/ Revised. -- Zero.

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

2/ All or part of these data have been referred to the Bureau of the Census for verification.

Source: Bureau of the Census.

TABLE 6  
U.S. IMPORTS FOR CONSUMPTION OF TITANIUM PIGMENTS 1/

(Metric tons)

	1999					2000
	First quarter	Second quarter	Third quarter	Fourth quarter	Year	January- February
<b>80% or more titanium dioxide:</b>						
Australia	914	3,690	1,110	520	6,230	--
Belgium	766	447	1,540	988	3,740	1,550
Canada	17,900	17,000	21,200	19,100	75,200	13,300
China	1,040	1,840	1,290	1,470	5,650	1,350
Finland	534	811	943	927	3,220	396
France	1,230	1,190	1,710	1,950	6,080	989
Germany	5,890	7,270	6,450	6,280	25,900	3,280
Japan	2,540	3,660	3,520	3,190	12,900	1,420
Norway	741	964	1,490	1,110	4,310	979
Singapore	544	907	1,040	903	3,390	490
Slovenia	623	930	572	578	2,700	243
South Africa	1,150	1,800	1,580	852	5,380	1,130
Spain	2,780	2,910	5,070	3,260	14,000	2,600
Other	3,180	6,700	6,930	4,280	21,100	4,140
Total	39,800	50,100	54,500	45,400	190,000	31,800

See footnotes at end of table.

TABLE 6--Continued  
U.S. IMPORTS FOR CONSUMPTION OF TITANIUM PIGMENTS 1/

(Metric tons)

	1999				Year	2000 January- February
	First quarter	Second quarter	Third quarter	Fourth quarter		
Other titanium dioxide:						
Canada	755	863	878	986	3,480	596
France	4	2	2	2	10	3
Germany	856	858	320	370	2,400	234
Italy	4	4	2	3	13	4
Spain	--	20	--	--	20	6
United Kingdom	138	25	5	3	171	10
Other	1,430	1,170	364	262	3,230	143
Total	3,190	2,950	1,570	1,630	9,330	996
Titanium oxide:						
Australia	2,040	1,340	--	--	3,380	--
Belgium	558	581	172	347	1,660	329
China	945	831	778	916	3,470	996
Czech Republic	520	673	611	436	2,240	122
France	3,260	1,580	927	2,090	7,850	1,270
Germany	186	431	167	25	809	62
Other	1,200	1,400	1,390	2,340	6,320	1,540
Total	8,710	6,830	4,050	6,150	25,700	4,310
Grand total	51,700	59,900	60,100	53,200	225,000	37,200

-- Zero.

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

Source: Bureau of the Census.

TABLE 7  
PUBLISHED PRICES OF TITANIUM MATERIALS

(End of period, first quarter 2000)

Specification of material	Range
Ilmenite, per metric ton:	
F.o.b. Australian ports	\$82 -- \$97
Titanium slag, per metric ton: 1/	
80% TiO <sub>2</sub> , Canada	379
85% TiO <sub>2</sub> , South Africa	413
Rutile, per metric ton:	
Natural:	
Bagged, f.o.b. Australian ports	500 -- 545
Bulk, f.o.b. Australian ports	450 -- 500
Sponge metal, per pound:	
Estimated, domestic	3.70 -- 4.80
Titanium scrap, per pound:	
Turnings, unprocessed (Ti-6Al-4V)	1.08 -- 1.12
Ferrotitanium, per pound:	
70% (max. 4.5% Al) per pound Ti	2.00 -- 2.10
Titanium dioxide pigment, per pound:	
Anatase, f.o.b. U.S. plants, list price	.92 -- .94
Rutile, f.o.b. U.S. plants, list price	.99 -- 1.02

1/ Estimated based on U.S. imports for consumption.

Sources: American Metal Market, Chemical Market Reporter, Industrial Minerals (London), Platt's Metals Week, and industry contacts.